APPENDIX

APPENDIX

IN THE UNITED STATES COURT OF APPEALS
FOR THE SEVENTH CIRCUIT

APRIL SESSION, 1956
OCTOBER TERM, 1955

No. 11707

AUREX CORPORATION, a corporation, and
WALTER H. HUTH, *Plaintiffs,*

v.

BELTONE HEARING AID COMPANY, a corporation, *Defendant.*

Appeal from the United States District Court for the Northern District of Illinois, Eastern Division.

August 31, 1956

Before DUFFY, *Chief Judge,* and FINNEGAN and SCHNACKENBERG, *Circuit Judges.*

SCHNACKENBERG, *Circuit Judge.* Defendant appeals from a judgment entered after a hearing by the district court, adjudging claims 1, 2, 15 and 16 of Cubert letters patent No. 2,304,339, owned by plaintiffs, valid and infringed by defendant, decreeing that plaintiffs recover from defendant damages resulting from said infringement and costs and expenses, and that defendant be enjoined from further infringement.

Plaintiffs' counsel state that the invention covered by the patent relates to an improved mounting of a microphone in a wearable hearing aid. They say that Cubert's invention relates to undesirable noises produced by physical contact of clothing, fingers or other objects with the cord, casing, or some other portion of the hearing aid apparatus, and that it practically eliminates "so-called clothing noises for persons having hearing deficiencies". They construe the patent as showing "that the [rear of the] microphone is cemented to the center of a sheet of silk or other flexible material which is stretched flat across an opening in a frame so that the microphone has no tight or rigid connection with the frame through which molecularly conducted noises might pass". They also say that "Cubert, working counter-current to the usual practice, achieved the result which had long evaded the prior workers in the art", that he found "that the microphone should not be packed tightly in any insulating or cushioning material" and that he "informed the art" that the microphone "should not be held tightly but should be supported in a free floating manner so that it would be freely movable bodily within the hearing aid casing".

Defendant's counsel contend that before any of the Cubert activity here in question it was known that microphones should be floatingly mounted to eliminate extraneous sounds. They point to uncontradicted evidence that springs, sponge rubber rings, felt pads or rings and gum rubber type elements were used for this purpose. They say that the accused device does not infringe "because it uses unstressed foam rubber cushions which are the antithesis of the only thing shown in the Cubert patent—the stretched sheet diaphragm."

Cubert's patent application was filed April 19, 1940 and the patent was issued December 8, 1942. Prior to April 19, 1940 Cubert, then an engineer for plaintiff Aurex, designed a hearing aid, in which a microphone was weighted

by a lead disk affixed on its rear side. Our inspection of the chassis and the casing of this construction shows that the combined lead disk and microphone required a circular opening in the chassis to receive the microphone. Cubert devised a construction to hold the microphone in this opening. He accomplished this by stretching a sheet of silk across the opening in the form of a diaphragm and cemented the sheet to the chassis at the edges of the opening. He then cemented the rear of the microphone to the sheet centered in relation to the opening. He also provided two foam rubber pads, bumpers, cushions or buttons, located on opposite sides on the front of and cemented to the microphone within its outer perimeter, and also a similar structure, round in shape, located and cemented to the sheet so as to place it between the sheet "where the latter was cemented to the back of the microphone and the back of the casing". These pads, by whatever name described, were admittedly conventional and were for the purpose of preventing shock.

These cushions are not mentioned in the written description of Cubert, although plaintiffs' witness Drumm testified in the district court that the round pad last above mentioned is shown in figure 4 of the drawings submitted with the application. However, there is no contention that it is in any way described or identified by any legend on the drawing.

Cubert's claims now in suit are:

1. In a portable microphone instrument to be worn on the person, as a part of a hearing aid apparatus, having an outside casing therefor, a microphone enclosed thereby and freely movable bodily therein and insulated against the communication thereto of vibrations set up in the said outside casing by scratching or contact or friction thereon.

2. A structure as specified in claim 1, said microphone having a mounting or support by material having a low degree of vibration-communicating capacity.

15. In a portable microphone instrument to be worn on the person, as a part of a hearing aid apparatus, having an outside casing therefor, a microphone enclosed thereby and freely movable bodily therein and insulted against the communication thereto of vibrations set up in the said outside casing, from within or by scratching or contact or friction thereon, or by attachments thereto, said microphone having a casing and a suitably supported sheet of flexible material fastened to the casing of the microphone and mounted on the outside casing.

16. In an amplifier hearing aid: a casing of hard material, of a size and shape that can be easily and conveniently carried in the pocket of a coat or under the clothing; a microphone housed in said casing; and supporting means including sheet elements of flexible material carrying said microphone in a relatively movable position within said casing so as to prevent vibrations imparted to the outside casing by scratching or the like from reaching the microphone.

The patent office examiner rejected claims 1 and 2, *inter alia,* as fully met by Franzblau[1] or Williams,[2] whereupon Cubert requested reconsideration because these claims called for a microphone instrument that "has freedom of movement within the outside casing, and this is not true of either one of the references cited."[3]

In Cubert's said request for reconsideration, in speaking of the silk cloth, he stated that "It can only vibrate mechanically in the manner of a diaphragm, but that is what gives the microphone freedom of motion within the outside casing."

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[1] 2,182,865.

[2] 1,311,430.

[3] In plaintiffs' brief they urge that the silk, as a sheet of flexible material of a low degree of vibration communicating capacity, thus suspended the microphone with clearance all around for free movement bodily relative to the casing.

However, Cubert amended his specifications by adding the language which is quoted in italics in the footnote below,[4] wherein are set forth excerpts from the specifications as amended.

In his specifications, as amended, Cubert says that "a sheet of silk is stretched on the back of the chassis or frame" and through the opening in the frame the back of the microphone extends and is cemented to this "thin flexible sheet". It is specified that this sheet of silk is "stretched on the back of the chassis or frame".

It is undisputed that prior to the Cubert patent it was known that extraneous sounds in microphones could be eliminated or diminished by a floating mounting.

In the accused device the microphone is located in the fore and aft direction by a pair of foam rubber cushions. The front cushion is in the form of a ring which, on one side thereof, is attached to the front edge of the micro-

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[4] "The invention resides in the method of mounting the microphone proper on the said frame or chassis, and in the weighting of the microphone over and above what is commonly or ordinarily done, in order to prevent vibrations, set up in the outside casing, from traveling through the said frame or chassis to the microphone, thereby creating a disturbance in the receiving instrument worn in the ear, or back of the ear, if bone conduction is employed. • • •

" • • • to prevent such disturbance and annoyance, an ordinary crystal microphone having an annular aluminum body 5, of light material, may have a lead back 6 of the requisite weight, thereby to give the microphone enough inertia for the desired purpose, and in addition, lead is not a transmitter of molecular vibrations, or of sound vibrations. In addition, a sheet of silk 7 is stretched on the back of the chassis or frame 1, and the said lead back 6 is cemented to the said sheet of silk or other flexible material. In this way, of course, the microphone proper is insulated against any vibrations that might be set up in the outside casing and that might be communicated therefrom to the said chassis or frame 1, and from the latter to the casing of the microphone, and then to the crystal inside. • • •

"It will be seen that the plate 1, which in effect forms a frame, has an opening 9 through which the back of the microphone 2 extends and is cemented to the thin flexible sheet 7, which is stretched flat on said frame." (Italics supplied.)

phone and, on the other side thereof, is attached to the inside of the front casing and around an open grill therein. The rear cushion is in the form of a smaller pad fastened only to the microphone. The district court found that the microphone is suspended by the foam rubber and without any stress upon the mounting member other than the slight weight of the microphone itself.

Defendant achieved its result by floating a microphone by the use of conventional cushions. It did not resort to a diaphragm. It did not use a thin sheet of silk or, in fact, a sheet of any material.

Cubert repeatedly refers to the diaphragm as a thin flexible sheet which is stretched. On the other hand, the district court found that in the accused device "a member of foam rubber is glued on one side to the inner surface of the hearing aid casing and on the other side to the microphone. The microphone is thus suspended by the foam rubber in an air space with clearance all the way around and *without any stress* upon the mounting member other than the slight weight of the microphone itself." (Emphasis supplied.) It further found that microphones "mounted upon unstressed foam rubber are freely movable bodily and isolated from the transmission thereto, through the mounting, of molecularly conducted sound vibrations" and also that the "microphone in the accused device is freely movable bodily and insulated against conduction thereto of molecular vibrations set up in the outside casing and receiver cord of the hearing aid, as by the rubbing of clothing thereon." Whatever may be the extent of the movability of the microphone of either the plaintiffs' or the accused device, the fact is that the microphone in the accused device is permitted to move only because of the *conventional* use of cushions. Defendant's result is attained without using the diaphragm method patented by Cubert. The latter's invention is directed only to a stretched sheet diaphragm used to solve his problem. Cushions cannot vibrate diaphragmatically. Cushions are relatively thick (in contrast to a "thin flexible

sheet, which is stretched flat''), and the thicker they are the more effective they become as non-conductors of molecularly conducted sound vibrations. Whereas Cubert devised the sheet diaphragm construction to locate a large weighted microphone in a chassis opening with small side, top, and bottom clearances, the accused device uses a small microphone with no added weight in a small chassis where side, top and bottom clearances are no problem, and without any chassis opening. Defendant simply glues the microphone to the cushion, which is itself fastened directly to the case. Cubert's patent, which teaches the use of a stretched diaphragm, is not infringed by the use of a conventional cushion, found by the district court to be unstressed except for the slight weight of the microphone itself. *Permutit Co.* v. *Graver Corp.*, 284 U.S. 52, 57; *Burroughs Adding Machine Co.* v. *Felt & Tarrant Mfg. Co.*, 243 Fed. 861, 870; *The Texas Company* v. *Globe Oil and Refining Co.*, 225 F. 2d 725, 733, 737.

Cubert placed his emphasis upon the use of a ''stretched'' support, and a ''thin flexible sheet'' which can ''only vibrate mechanically in the manner of a diaphragm''. Surely this cannot encompass a microphone ''mounted upon unstressed foam rubber'', or a microphone '' * * * suspended by the foam rubber * * * without any stress upon the mounting member other than the slight weight of the microphone itself.''

We conclude that defendant has not infringed the Cubert patent, as alleged in plaintiffs' complaint. Therefore, the judgment of the district court is reversed.

The district court did not adjudicate upon a counterclaim filed by defendant, praying *inter alia* for a judgment that the claims in suit are not infringed by any hearing aids manufactured by defendant. On that contention, *inter alia*, plaintiffs joined issue on the counterclaim by filing an answer thereto, but they offered no evidence with respect to any of defendant's models other than the accused device.

Defendant introduced evidence in support of its counterclaim, showing that hearing aids known as defendant's exhibits 1 to 9 inclusive[5] and defendant's exhibit 12[6] each involve a mounting of a microphone which in principle is the same as the mounting involved in the accused device. Furthermore, interrogatory No. 23 submitted by defendant read:

> "Do Plaintiffs charge any of the following hearing aids manufactured by Plaintiff as infringements of Cubert Letters Patent No. 2,304,339 and, if so, state which claims are alleged to be infringed.
>
> a. TR
> b. Lyric Transistor
> c. Mono-Pac
> d. Rhapsody
> e. Concerto
> f. Model H
> g. Symphonette
> h. Melody
> i. Harmony
> j. Lyric."

Plaintiffs answered that said hearing aids "all appear to embody the invention of Cubert Letters Patent No. 2,304,339 as defined in Claims 1, 2, 15 and 16 thereof". The hearing aids described in interrogatory No. 23 include defendant's exhibits 1 to 9 inclusive. It appears that defendant's exhibit 10 for identification[7] is the hearing aid referred to as Concerto in interrogatory No. 23. Inasmuch as defendant's attempts were abortive when it tried to establish by references to a chart (sometimes referred to as "defendant's exhibit 20" but not received in evidence) that the Concerto

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[5] Defendant's exhibit 8 appears to be the same model as plaintiffs' exhibit 9.

[6] Known as Allegro.

[7] It was not received in evidence.

model involved a microphone mounting similar to that involved in the accused device, we find that on the record before us defendant is not entitled to any relief on its counterclaim as to that model.

Our views in reference to the accused device, (which is known in the record as plaintiffs' exhibit 9, and also as defendant's exhibit 8, and a part of which is reproduced in a drawing known as plaintiffs' exhibit 14) of course apply to the hearing aids actually introduced in evidence by defendant in support of its counterclaim.[8] They do not infringe the claims of Cubert in issue in this case. As to those hearing aids, it follows that the district court erred in not entering judgment of noninfringement on the counterclaim. Accordingly, this case is remanded to the district court for that purpose.

REVERSED AND REMANDED WITH INSTRUCTIONS.

FINNEGAN, *Circuit Judge, Dissenting.* I would affirm the judgment of the District Court.

A true Copy:

Teste:

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Clerk of the United States Court of Appeals for the Seventh Circuit.

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[8] Defendant's exhibits 1 to 9 inclusive and defendant's exhibit 12.

IN THE UNITED STATES COURT OF APPEALS
FOR THE SEVENTH CIRCUIT

OCTOBER TERM, 1955
APRIL SESSION, 1956

No. 11707

AUREX CORPORATION and WALTER H. HUTH,
Plaintiffs-Appellees,

v.

BELTONE HEARING AID COMPANY, *Defendant-Appellant.*

Appeal from the District Court of the United States for the Northern District of Illinois, Eastern Division.

September 11, 1956

DUFFY, *Chief Judge,* concurring.

As I agree that infringement of the claims in suit was not established, I concur that the cause must be reversed and remanded. However, I think we should have discussed and decided the question of the validity of the claims in suit.

In *Sinclair Co.* v. *Interchemical Corp.*, 325 U.S. 327 the Court said, page 330: "There has been a tendency among the lower courts in infringement suits to dispose of them where possible on the ground of non-infringement without going into the question of validity of the patent (Citing cases). It has come to be recognized, however, that of the two questions, validity has the greater public importance (citing case), and the District Court in this case followed

what will usually be the better practice by inquiring fully into the validity of this patent."

In the case at bar the District Court upheld the validity of the claims in suit. That question was squarely raised on this appeal. I recognize there is some difference of opinion in the circuits as to the interpretation to be given to the admonition of the Supreme Court in the *Sinclair* case. The Sixth Circuit interprets it as a direction always to decide the issue of validity. *Pennington Engineering Co.* v. *Spicer Mfg. Co.*, 165 F.2d 59, 61.

In *Powder Power Tool Corp.* v. *Powder Actuated Tool Corporation*, 230 F.2d 409, 415, this Court said: "In spite of our determination of non-infringement we follow the 'better practice' and turn now to the question of the validity of the claims."

There is, of course, some justification for other courts to hold that where there is non-infringement and the claims of the patent are not clearly invalid on their face, that it is, in effect, deciding a moot question to consider the question of validity. See *Harries* v. *Air King Products Co.*, 183 F. 2d 158, 162; *Patent Scaffolding Co.* v. *Up-Right, Inc.*, 194 F. 2d 457.

In the case at bar we have the situation where one judge, in dissenting, states that he would affirm the judgment of the District Court. That necessarily means that he thinks the claims in suit are valid. I likewise am of the opinion that the claims in suit are valid. Under such circumstances I think the question of validity should have been discussed and decided in the main opinion.

A true Copy:

Teste:

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Clerk of the United States Court of Appeals for the Seventh Circuit.

IN THE UNITED STATES DISTRICT COURT

* * (Caption—54 C 486) * *

Findings of Fact and Conclusions of Law.

1. Plaintiff, Aurex Corporation, is a corporation of the State of Illinois with a regular and established place of business at 1117 North Franklin Street, Chicago, Illinois where it is engaged in the business of manufacturing and selling portable hearing aids to be worn in and about the clothing of persons suffering from a hearing loss.

2. Plaintiff, Walter H. Huth, the present owner of the patent involved in this action, is an individual residing at 6229 North Winthrop Street, Chicago, Illinois.

3. Defendant Beltone Hearing Aid Company is a corporation of Illinois with a regular and established place of business at 2900 West 36th Street, Chicago 32, Illinois where it is engaged likewise in the business of manufacturing and selling portable hearing aids to be worn on the person.

89 4. The patent in suit is United States Letters Patent No. 2,304,339 issued December 8, 1942 on the invention of Joseph R. Cubert for an improved "Microphone". The patent was assigned to Plaintiff Aurex Corporation before its issuance, as noted on the face thereof, and later assigned June 7, 1948 to Plaintiff Walter H. Huth who ever since then has been the owner of said Letters Patent. Ownership of the patent is not contested.

5. This is a civil action brought under the Patent Laws of the United States, and in accordance with the provisions of Title 28 U. S. C. Secs. 1338 and 1400 (b), charging defendant with the infringement of Claims 1, 2, 15 and 16 of the Cubert Patent No. 2,304,339 and seeking injunctive relief; an accounting for profits and damages, not less than a reasonable royalty therefor; costs; and reasonable attorneys' fees. The acts of infringement complained of were and are being committed by defendant in the City of Chicago, State of Illinois within this District and elsewhere within the United States.

6. Hearing aids such as that involved in this action have a microphone mounted in an outside casing along with batteries and a miniature electronic sound amplifier to form a self-contained unit. The microphone itself includes a diaphragm and crystal sub-assembly supported in
90 a microphone housing. Airborne sound vibrations are picked up by the diaphragm and transmitted thereby to the crystal as desirable sounds whereas mechanical vibrations transmitted to the microphone housing are picked up directly by the crystal as undesirable sounds and converted in electric pulsations. These pulsations are fed into the amplifier and the output of the amplifier is conducted by a cord known as a receiver cord to a receiver that is inserted in the ear of the user. There the amplified electric pulsations are converted back to sound vibrations.

7. The self-contained hearing aid unit is usually carried in a pocket on the clothing of the user where the outside casing thereof and the receiver cord connected thereto are in constant rubbing and scratching contact with the clothing as the wearer moves about.

8. This contact develops vibrations, a slight amount of which becomes airborne, but most of which are set up as molecular vibrations and transmitted by molecular conduction through the solid materials of which the assembled parts and receiver cord are made.

9. Perforated openings in the casing of the hearing aid permit airborne sound vibrations desired to be heard to reach the diaphragm of the microphone, but prior to the invention of the patent in suit the molecular vibrations set up in the casing of the hearing aid reached the crystal of the microphone directly by molecular conduction through the material of the assembled parts, which parts included a shock cushioning material always under substantial stress.

91 10. Shock cushioning materials as used prior to the invention of the patent in suit for portable hearing aids did not permit free bodily movement of the microphone

supported thereby and transmitted substantial amounts of molecular vibration to the microphone housing and the crystal from the casing of the hearing aid.

11. Expert witnesses as well as other witnesses, for both parties, are in agreement that a major problem existed in the hearing aid industry with respect to the transmission to the microphone of noises and other undesirable sound vibrations set up in the casing and cord of the hearing aid by the clothing of the user scratching and rubbing against them.

12. Molecular vibrations transmitted by molecular conduction are harsh and sharp and of greater amplitude as compared with the airborne vibrations which are dampened by the air carrying them. In heretofore conventional hearing aids, the vibrations that reach the microphone included the highly undesirable harsh molecular vibrations, identified as clothing noises, which masked and interfered with the desirable airborne sounds.

13. Clothing noises carried into the output of a hearing aid are particularly annoying and irritating to a person suffering a hearing loss. It is always present within the limited range of sound perception available to him.

92 14. The invention covered by the patent in suit is for a microphone mounting by which the microphone is freely movable bodily on a floating support in the housing of a hearing aid, as hung in the air by a material having a low degree of vibration communicating capacity, whereby molecular vibrations such as clothing noises developed in the casing of the hearing aid have no molecularly conductive bridge to the microphone and are kept from reaching the microphone and being heard by the user. Substantially all vibrations are cut off from reaching the microphone crystal except those sounds which are airborne to the diaphragm of the microphone.

15. The invention covered by the patent in suit is a substantial and important advance in the art of hearing aids for persons having defective hearing.

16. The result attained by the invention of the patent in suit is the prevention of all vibrations from reaching the microphone of a hearing aid except the desirable ones which are airborne to the microphone. The problem solved was how to prevent molecularly transmitted sound vibrations, particularly clothing noises, set up in the outer casing of a hearing aid from reaching the microphone of a portable hearing aid.

17. Licenses under the patent in suit have been granted to the Western Electric Company, Zenith Radio Corporation, Sonotone Corporation and Radioear Corporation, all of which are manufacturers of portable hearing aids.
93 The license to Western Electric was solicited by Western Electric in 1948 after a change made by Western Electric in its microphone mounting on its hearing aid. The license to Zenith Radio Corporation was solicited by Plaintiff and granted in 1950.

18. The licenses to Sonotone Corporation and Radioear Corporation grew out of a three party interference No. 78,931 which was concluded in favor of the patent in suit on Claims 1 and 16 thereof which are involved in this action. The other two parties were Samuel F. Lybarger, Application Serial No. 347,700 owned by Radioear, and R. W. Carlisle, Patent No. 2,351,400 owned by Sonotone. The specific embodiment shown in all three interfering applications differ from each other in structure and material but the microphones in all three structures are freely movable bodily as supported on floating supports.

19. The accused device is the model Mono-Pac TR Hearing Aid (Plaintiffs' Exhibit 9) manufactured and sold by defendant before this action was brought.

20. Actual notice of infringement was given by Plaintiffs to Defendant on or about October 26, 1953 and constructive notice of said patent has been given to Defendant by Plaintiff Aurex Corporation marking the patent number as required by Statute on all devices manufactured by it embodying the invention covered by the patent in suit.

94 21. In the accused device, a member of foam rubber is glued on one side to the inner surface of the hearing aid casing and on the other side to the microphone. The microphone is thus suspended by the foam rubber in an air space with clearance all the way around and without any stress upon the mounting member other than the slight weight of the microphone itself.

22. Microphones mounted upon unstressed foam rubber are freely movable bodily and isolated from the transmission thereto, through the mounting, of molecularly conducted sound vibrations.

23. The microphone in the accused device is freely movable bodily and insulated against conduction thereto of molecular vibrations set up in the outside casing and receiver cord of the hearing aid, as by the rubbing of clothing thereon.

24. Defendant in its advertising in 1952 stressed the suppression of clothing noises as a feature of the accused device (Plaintiffs' Exhibit 18A).

25. Plaintiff's demonstration in open court of various mounting materials and methods by the witness Bartlett, who has a subsantial hearing deficiency, shows that only those mountings in which the microphone is freely movable bodily on a material having a low vibration communicating capacity effectively prevents the transmission to the microphone of molecularly conductive sound vibrations developed in the casing or receiver cord.

95 26. The microphone mounting of foam rubber sheet material in the accused device is the equivalent of the specific embodiment of the invention shown in the patent in suit.

27. Defendant's device responds to the terms of the claims in suit to perform in substantially the same manner and to give substantially the same result as the patent in suit within the intent and meaning of the claims.

28. Claims 1, 2, 15 and 16 of the patent in suit are infringed by the accused device.

29. The concept and practice of the invention as taught by the patent in suit and as found in the accused device is not found in any of the prior art relied upon by the defendant.

30. The prior patents and publications cited by defendant and introduced in evidence, considered singly and collectively, fail to teach the invention taught and claimed in the patent in suit.

31. None of the references cited by the defendant and introduced into evidence are any better as references than the patents cited by the Patent Office during the prosecution of the application which resulted in the patent in suit, and therefore it may be presumed that the Examiner in charge of the prosecution of the application in the Patent Office noticed and passed over all of the other refer-
96 ences relied upon by the defendants, as showing no more than the ones that were specifically cited in the prosecution of the patent, particularly in view of the fact that Claims 1 and 16 were probably given extra consideration by the interference parties as well as the examiner as counts of the interference No. 78931.

32. Prior art devices adduced by defendant as anticipations of the claims in suit fail to show or suggest the inventive concept, or its practice, as taught by the patent in suit.

33. The concept of the patent in suit was entirely different than the prior practice. Instead of packing microphones in place as one would a delicate instrument for shipment, the invention contemplated doing just the opposite. According to the invention the microphone is mounted without any stress on a supporting material of low vibration conductive capacity so that it is freely movable bodily from its normal resting position. The movement of the microphone is unopposed by any member under stress which engages it and this unstressed support will not transmit molecular vibrations from the housing to the microphone.

34. Prior art devices and early patents and models submitted by Defendants for purposes of anticipation had

microphones held or placed in place against shock by materials engaging the microphone casing under stress.
97 These materials were merely cushioning materials such as felt, rubber, leather, sponge rubber, and springs, placed under compression or tension to protect the microphone against physical harm. All of these materials as used transmit molecular vibrations.

35. The Western Electric Model 38-A hearing aid, Defendant's Exhibit 11, offered by Defendant as a prior public use, has a microphone mounting of a solid rubber material clamped in place by flat springs under tension which established a compressive stress upon the mounting material. The microphone of this exhibit is not freely movable bodily and the solid rubber mounting material will transmit molecular sound vibrations. The Western Electric Model 38-A fails to meet the terms of the claims in suit.

36. The failure of the spring clamped rubber mounting to eliminate the transmission of molecular sound vibrations to the microphone in the Western Electric Model 38-A was recognized by the Western Electric engineers in their development of an improved hearing aid in which the microphone was mounted for free bodily movement, and caused Western Electric to approach plaintiff and seek a license for the improved device.

98 37. The Shure Bros. microphone Model 760-A (Defendants' Exhibit 18b) offered by Defendant as prior public use embodies a plurality of sponge rubber supports clamped under compression over the rim of the microphone. The microphone of this Exhibit is not freely movable bodily and compressed sponge rubber mounting material transmits molecular sound vibrations as shown by tests conducted by Plaintiff in open court.

38. The Shure Bros. microphone model 760-A (Defendants' Exhibit 18b) does not anticipate the claims 1, 2, 15 and 16 of the patent in suit.

39. The patent in suit is presumed to be valid, has prevailed in a three party interference involving the subject

matter of two claims here in issue, and Defendant has failed to rebut the presumption of validity.

99 Conclusions of Law.

1. The Court has jurisdiction of the subject matter of this Action and of the parties to it, and the venue of the Action is properly laid in the Northern District of Illinois, Eastern Division.

2. Plaintiffs are owners in privity of the patent in suit and of all rights thereunder, including the right of injunctive relief against infringement and to recovery for past infringement.

3. Each of the claims 1, 2, 15 and 16 of Cubert Patent No. 2,304,339 in suit involves patentable subject matter; is not anticipated; and is valid in law.

4. Each of the claims 1, 2, 15 and 16 of Cubert Patent No. 2,304,339 in suit is infringed by Defendant's accused hearing aid.

5. Plaintiffs are entitled to a permanent injunction and to an assessment of damages for past infringement and costs, as prayed for in the Complaint.

100 6. There shall be a judgment in the usual form adjudicating the Cubert patent No. 2,304,339, and claims 1, 2, 15 and 16 thereof, to be valid and infringed by said Defendant; enjoining said Defendant as above provided; ordering an accounting for damages sustained by Plaintiffs as a result of past infringement; and awarding costs to Plaintiffs.

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UNITED STATES PATENT OFFICE

2,304,339

MICROPHONE

Joseph R. Cubert, Chicago, Ill., assignor to Aurex Corporation, Chicago, Ill., a corporation of Illinois

Application April 19, 1940, Serial No. 330,479

17 Claims. (Cl. 179—107)

This invention relates to microphones for use as a part of a hearing aid apparatus, of the kind that can be worn under the lapel of a coat, or under a garment, or concealed in some other way.

Generally stated, the object of the invention is to provide a novel and improved construction and arrangement whereby impacts on the outside casing of the instrument, or scratching thereon, even by the clothing of the person wearing the apparatus, or things other than what the user desires to hear, will not be conveyed to the microphone mounted within the casing, the said microphone being preferably of the well known crystal type, and being very sensitive.

It is also an object to provide certain details and novel features of construction tending to increase the general efficiency and desirability of a hearing aid microphone of this particular character.

To the foregoing and other useful ends, the invention consists in matters hereinafter set forth and claimed and shown in the accompanying drawing, in which—

Fig. 1 is a perspective of a microphone instrument embodying the principles of the invention.

Fig. 2 is a top or front view, with the front cover of the casing removed.

Fig. 3 is a rear elevation or back view of the microphone and the frame by which it is mounted in the outside casing, showing the latter in section.

Fig. 4 is a longitudinal section on line 4—4 in Fig. 1 of the drawing.

Fig. 5 is a perspective of the annular microphone that is enclosed in the outside casing.

As thus illustrated, the invention comprises an inside frame or chassis 1, on which the microphone 2 is mounted, and on which the amplifying tubes and other things are also mounted. This frame or chassis is suitably fastened in the casing 3 that preferably has a removable front cover 4, as shown in the drawing.

The invention resides in the method of mounting the microphone proper on the said frame or chassis, and in the weighting of the microphone over and above what is commonly or ordinarily done, in order to prevent vibrations, set up in the outside casing, from traveling through the said frame or chassis to the microphone, thereby creating a disturbance in the receiving instrument worn in the ear, or back of the ear, if bone conduction is employed. With the ordinary construction, even the brushing and rustling and friction of clothing against the outside casing creates a disturbance in the said receiving instrument, to the annoyance of the user thereof.

Therefore, to prevent such disturbance and annoyance, an ordinary crystal microphone having an annular aluminum body 5, of light material, may have a lead back 6 of the requisite weight, thereby to give the microphone enough inertia for the desired purpose, and in addition, lead is not a transmitter of molecular vibrations, or of sound vibrations. In addition, a sheet of silk 7 is stretched on the back of the chassis or frame 1, and the said lead back 6 is cemented to the said sheet of silk or other flexible material. In this way, of course, the microphone proper is insulated against any vibrations that might be set up in the outside casing and that might be communicated therefrom to the said chassis or frame 1, and from the latter to the casing of the microphone, and then to the crystal inside. In other words, the microphone has a floating support and is insulated against structural vibration of the instrument as a whole, so that the crystal can only be energized or agitated by the sound vibrations coming in from the atmosphere through the louvre openings 8 in the front cover of the casing, these openings being opposite the front of the microphone.

It will be understood, of course, that instead of providing the lead back 6 in an aluminum microphone frame, as shown, the entire annular frame or casing of the crystal microphone can be thickened and increased in weight to the point where the desired degree of inertia will be insured for the microphone proper; but it will be understood that too much weight is not desirable, and that hence a moderate amount of weight, plus the silk mounting, or other mounting of flexible material, is more desirable as an expedient for preventing structural vibrations in the outside casing of the instrument from being finally conveyed to the crystal element in the microphone. It is found that in this way, tapping or brushing or friction or scratching on the outside casing does not create a disturbance in the ear of the user of the hearing aid apparatus.

In other words, the invention broadly considered prevents all vibrations from reaching the elements of the microphone proper, except those that are desired to be heard by the user of the instrument.

It will be seen that the plate 1, which in effect forms a frame, has an opening 9 through which the back of the microphone 2 extends and is cemented to the thin flexible sheet 7, which is stretched flat on said frame.

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What I claim as my invention is:

1. In a portable microphone instrument to be worn on the person, as a part of a hearing aid apparatus, having an outside casing therefor, a microphone enclosed thereby and freely movable bodily therein and insulated against the communication thereto of vibrations set up in the said outside casing by scratching or contact or friction thereon.

2. A structure as specified in claim 1, said microphone having a mounting or support by material having a low degree of vibration-communicating capacity.

3. A structure as specified in claim 1, said microphone having a mounting or support by material having a low degree of vibration-communicating capacity, said material being a sheet of flexible non-vibration transmitting material stretched on a frame or chassis mounted inside of said casing.

4. A structure as specified in claim 1, said microphone being of greater weight than is commonly or ordinarily employed, thereby to give it the desired degree of inertia within the said casing.

5. A structure as specified in claim 1, said microphone having greater weight than is usual or ordinary in instruments of this kind, to give it greater inertia, and having a mounting or support of non-vibration-communicating material within said casing.

6. A structure as specified in claim 1, the said microphone having a hollow body which is enclosed in said outside casing and which is provided, to a more or less extent, with lead metal to retard molecular vibration and to provide the desired degree of inertia for the microphone.

7. The combination of a casing having a complete microphone mounted and freely movable bodily within limits therein, and preventive means inside the casing, intervening between the latter and said microphone, acting to insulate the microphone against communication thereto of vibrations set up in the outside casing, said means comprising a lead weight at the back of the microphone proper inside said casing.

8. A portable microphone comprising a casing of hard material, of a size and shape that can be easily and conveniently carried in the pocket of a coat or under the clothing, a plate rigidly fastened in place in said casing, forming a frame, a sheet of thin flexible non-metallic material stretched flat on said frame, with freedom of diaphragmatic vibration, but incapable of transmitting any molecular vibrations of disturbance communicated to said frame, and a microphone instrument attached to said sheet and freely movable therewith, thereby preventing any vibration of said casing from reaching the active element of said instrument, the front wall of the casing having one or more openings through which sound waves may reach said instrument.

9. A structure as specified in claim 8, said material being cloth to which the back of said instrument is cemented.

10. A structure as specified in claim 8, and including a weight secured to said instrument within said casing to dampen and retard movement thereof relative to said casing.

11. In a portable microphone instrument to be worn on the person, as a part of a hearing aid apparatus, having an outside casing therefor, a microphone enclosed thereby and freely movable bodily therein and insulated against the communication thereto of vibrations set up in the said outside casing by scratching or contact or friction thereon, said microphone having a casing formed with a flat back, and a suitably supported flat sheet of non-metallic flexible material cemented flatwise to said flat back.

12. A structure as specified in claim 11, said back being of relatively heavy material that is sound deadening in character.

13. A structure as specified in claim 11, said back being formed by a thickness of lead.

14. A structure as specified in claim 11, said sheet of material being of a fibrous nature and a non-conductor of sound.

15. In a portable microphone instrument to be worn on the person, as a part of a hearing aid apparatus, having an outside casing therefor, a microphone enclosed thereby and freely movable bodily therein and insulated against the communication thereto of vibrations set up in the said outside casing, from within or by scratching or contact or friction thereon, or by attachments thereto, said microphone having a casing and a suitably supported sheet of flexible material fastened to the casing of the microphone and mounted on the outside casing.

16. In an amplifier hearing aid: a casing of hard material, of a size and shape that can be easily and conveniently carried in the pocket of a coat or under the clothing; a microphone housed in said casing; and supporting means including sheet elements of flexible material carrying said microphone in a relatively movable position within said casing so as to prevent vibrations imparted to the outside casing by scratching or the like from reaching the microphone.

17. In a portable microphone instrument to be worn on the person, as a part of the hearing aid apparatus, having an outside casing therefor, a microphone enclosed thereby and freely movable bodily therein and insulated against the communication thereto of vibrations set up in the said outside casing by scratching or contact or friction thereon, one element of said microphone having a mass of substantial inertia.

JOSEPH R. CUBERT.

CERTIFICATE OF CORRECTION.

Patent No. 2,304,339. December 8, 1942.

JOSEPH R. CUBERT.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, first column, line 55, claim 8, for "of" read --or--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 11th day of May, A. D. 1943.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)

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Dec. 8, 1942. J. R. CUBERT 2,304,339

MICROPHONE

Filed April 19, 1940

FIG. 1.

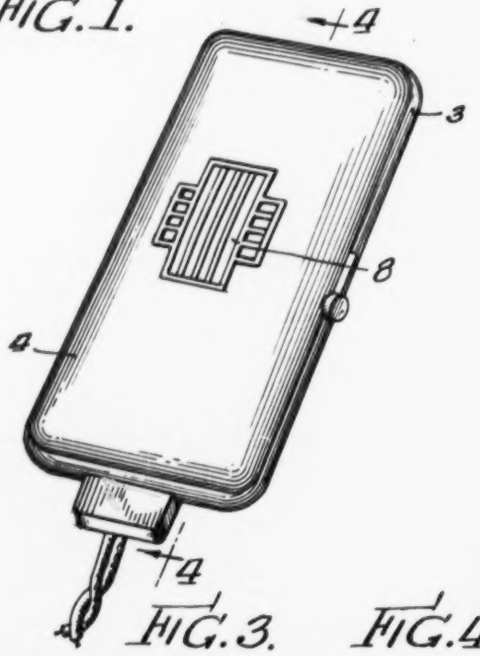


FIG. 2.

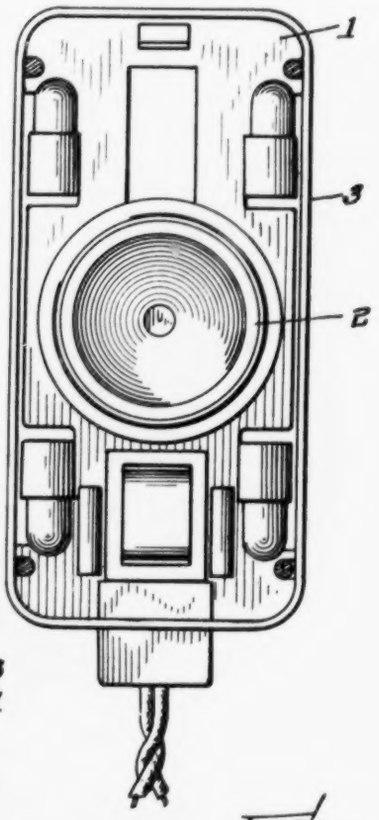


FIG. 3.

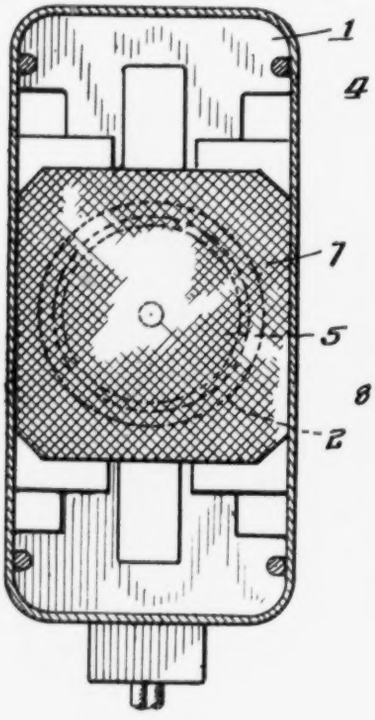


FIG. 4.

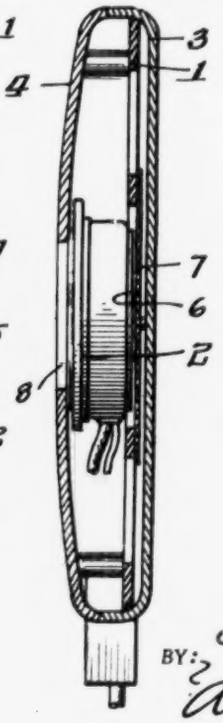
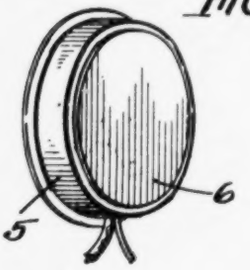


FIG. 5.



INVENTOR.
Joseph R. Cubert

BY: Arthur H. Durand
ATTORNEY.

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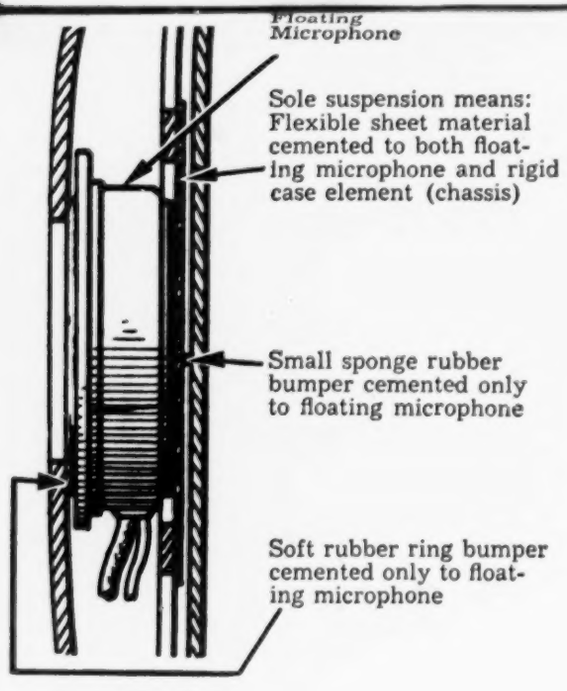
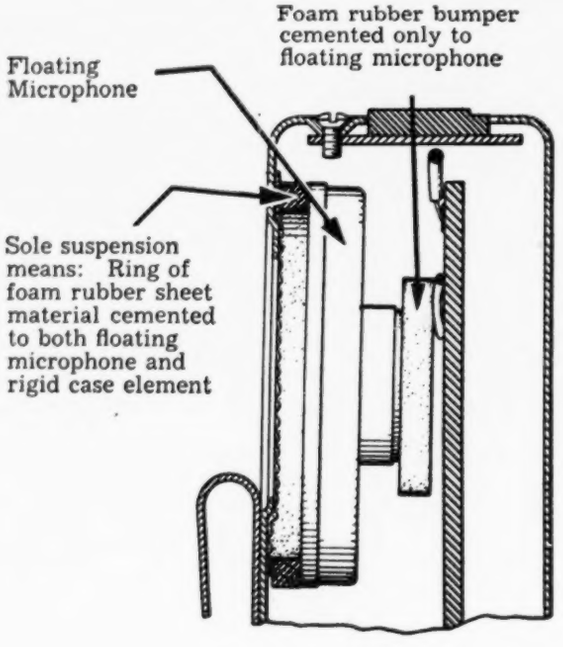

Floating Microphone
Sole suspension means: Flexible sheet material cemented to both floating microphone and rigid case element (chassis)
Small sponge rubber bumper cemented only to floating microphone
Soft rubber ring bumper cemented only to floating microphone

Cubert construction from patent drawing

(R. 135, 137, 162, 188)


Foam rubber bumper cemented only to floating microphone
Floating Microphone
Sole suspension means: Ring of foam rubber sheet material cemented to both floating microphone and rigid case element

Accused Beltone construction

(Pltf. Exhibit 14; R. 170 thru 181)

APR 25 1957
JOHN T. FEY, Clerk

IN THE

Supreme Court of the United States

OCTOBER TERM, 1956

No. 561

AUREX CORPORATION AND WALTER H. HUTH, *Movants*

v.

BELTONE HEARING AID COMPANY

MOTION TO RECALL NOTICE OF DENIAL OF CERTIORARI, AND TO AMEND ORDER DENYING CERTIORARI

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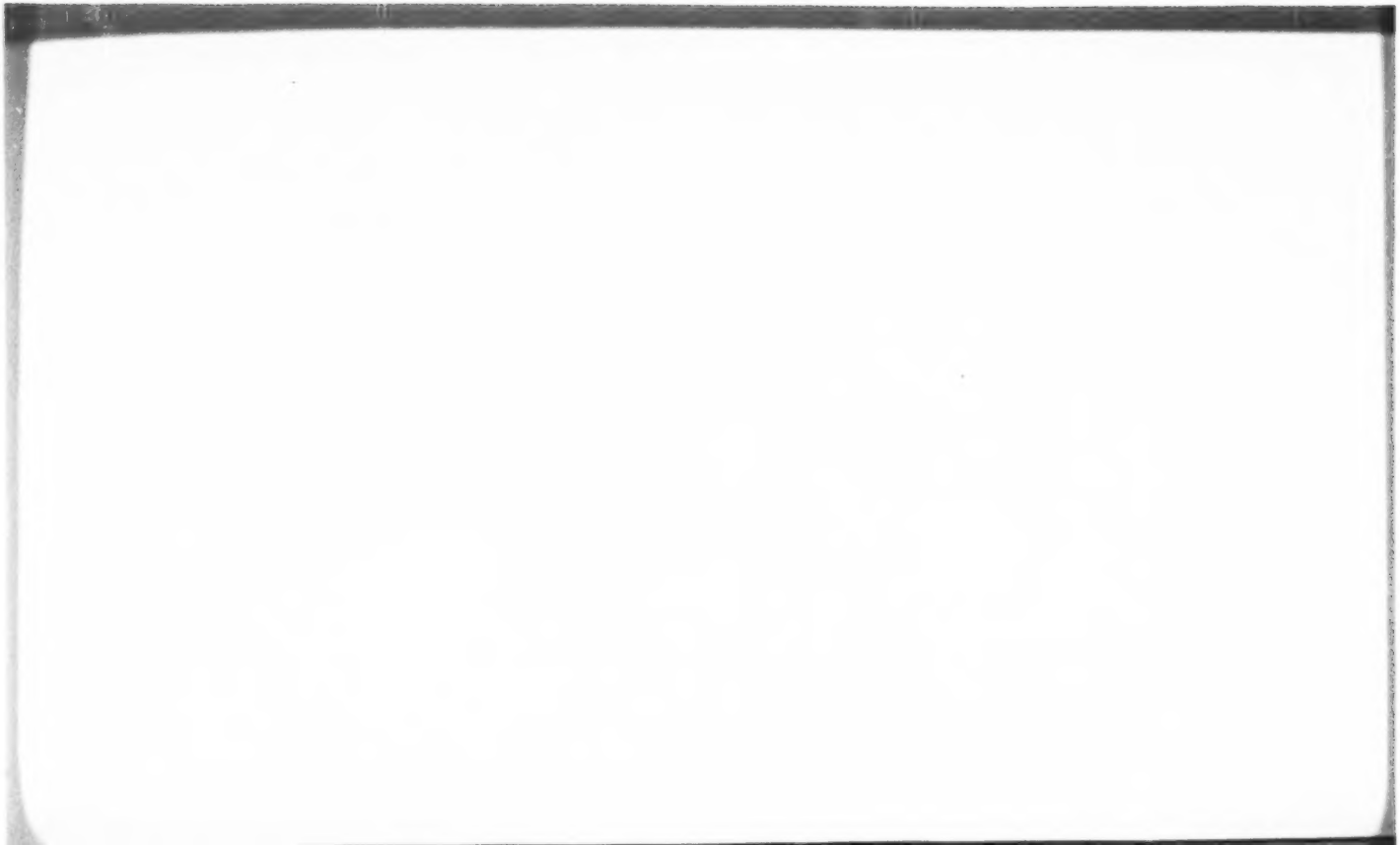

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Aurex Corporation and Walter H. Huth, movants, respectfully move the Court to direct the clerk to recall his notice of the denial of certiorari herein, and to amend that order by granting certiorari; and as grounds for said motion represent:

1. The propriety of this motion is established by *Cahill* v. *New York, New Haven & Hartford Railroad Company,* 351 U.S. 183, 76 S. Ct. 758, 100 L. Ed. 1075 (1956). There this Court, after brief and argument

by the parties, had reversed the Court of Appeals, and subsequently denied a petition for rehearing. Despite its rule that "consecutive petitions for rehearings, and petitions for rehearing that are out of time under this rule, will not be received". (Supreme Court Rule 58(4), Title 28 USCA, Rules), this Court entertained and granted a motion to recall its mandate and to amend its judgment. The finality attaching in the Cahill case to the judgment there amended, after denial of rehearing, would seem greater in degree than attaching to the denial of certiorari herein, where this Court has not passed upon the merits of the issue. Thus the Cahill decision establishes the authority of this Court to grant the relief here sought.

2. This motion invokes the principle stated recently by Mr. Justice Frankfurter, and concurred in by Justices Burton and Harlan, in *opposing* review by this Court, that "if ever the contingency arises when a Court of Appeals challengingly or ignorantly disregards the controlling law as set forth by this Court, *the means for correction here are ample and sure.*" (*Lawlor, et al* v. *National Screen Service Corp.*, U.S. , 1 L. Ed. 2d 540 at 542, 1957, emphasis supplied). The opinion[1] of Judge Schnackenberg in the Court of Appeals in overturning clear findings of fact relative to infringement and equivalence, affirmatively misstates the evidence and record on which that opinion purports to be based; by way of omission, ignores uncontradicted evidence in the record not only warranting but compelling the findings of fact that opinion overturns; and thus flouts the decision of this

[1] (Set forth in full as Appendix II to Petition for Certiorari; and pages 1a through 9a, Appendix, Petition for Rehearing of Order Denying Petition for Writ of Certiorari).

Court in the *Graver Tank & Manufacturing Company, Inc.,* et al v. *Linde Air Products,* 336 U.S. 271, 69 S. Ct. 535, 93 L. Ed. 672; decision adhered to on rehearing; 339 U.S. 605, 70 S. Ct. 854, 94 L. Ed. 1007 (1950), and Rule 52(a) of the Federal Rules of Civil Procedure.

3. The Court of Appeals and the District Court both held valid the discovery patented—namely, that sounds generated in the casing of a microphone—such as caused by friction of the casing with the user's clothing—(which prior to the discovery were molecularly conducted to the microphone and there amplified as static), became inaudible when the microphone was suspended on a medium free from tension or stress. Both courts necessarily ruled that the advance over the prior art was the absence of tension or stress in the microphone mounting. Nonetheless, Judge Schnackenberg, in his opinion, concurred in by Judge Duffy, held the accused device did not infringe the validly patented and broadly claimed discovery, because utilizing an *unstressed* microphone support. Thus paradoxically, Judge Schnackenberg's opinion holds *non* infringement because of user of the very principle patented, and is completely irrational.

4. The Language of the claims involved state the principle discovered without any qualification as to the type of supporting medium of the microphone. (Claims 1, 2, 15 and 16, R. 8, 9) In addition, the patent's issuance followed an interference proceeding in the Patent Office, in which it prevailed without qualification to the broad claim over *unstressed* rubber mountings *because they were, like the silk sheet mounting embodiment of the applicant, unstressed.* (Finding 18, R. 561; R. 540-548; 531, 532.) The opinion of

Judge Schnackenberg for the Court of Appeals omits this significant history of the patent, in reading into the unqualified language of the claims limitations excluding their application to the unstressed rubber mounting of the defendant Beltone. Thus Judge Schnackenberg gave no effect to the prior determination of the Patent Office, which conclusively demonstrates the broad language of the claims was deliberately rather than inadvertently used to apply to the very device he held did not infringe. This Court has "frequently held that it is the claim which measures the grant to the patentee". *Graver Tank & Manufacturing Co.* v. *Linde Air Products,* 336 U.S. 271 at 277, (1949); a fortiori the claims must be given effect when the patent's history shows their literal language to have been consciously and deliberately employed to apply to an accused device.

5. The failure of Judge Schnackenberg's opinion to reflect the true state of the record is shown by the following errors:

Statements in Opinion of Judge Schnackenberg	The Errors Thus Committed
"Defendant's counsel contend that before any of the Cubert activity here in question it was known that microphones should be floating mounted to eliminate extraneous sounds. They point to uncontradicted evidence that springs, sponge rubber rings, felt pads or rings and gum rubber type elements were used for this purpose." (p. 2)	The "uncontradicted evidence" referred to involved springs, sponge rubber supports, felt pads or rings and solid gum rubber type elements, that were *always under applied stress or tension.* (Findings 10, 25, 33 and 34, 35 and 37 (R. pp. 360-364). Moreover, where sponge rubber was used it was not as "rings".

To ignore this distinction in the "uncontradicted" evidence is to ignore the discovery which was patented.

"It is undisputed that prior to the Cubert patent it was known that extraneous sounds in microphones could be eliminated or diminished by a floating mounting." (p. 5)

This is wholly without foundation. It is exactly the opposite which is undisputed, and is the very basis for the patent. (Finding 29 and 33, R. p. 562 and 563).

"Defendant achieved its result by floating a microphone by the use of *conventional cushions*, (p. 5).

• • •

"Whatever may be the extent of the movability of the microphone of either the plaintiffs' or the accused device, the fact is that the microphone in the accused device is permitted to move only because of the *conventional* use of cushions. (p. 5)

The *conventional* use of cushions, was to *stress* them. It is the importance of lack of stress which was the discovery; the lack of stress was the feature of the accused devices which made them infringe. (Finding 10, R p. 560.)

• • •

"Cubert's patent, which teaches the use of a stretched diaphragm, is not infringed by the use of a conventional cushion, found by the district court to be unstressed except for the slight weight of the microphone itself." (p. 6) (Emphasis supplied)

"Cubert placed his emphasis upon the use of a 'stretched' support, and a 'thin flexible sheet' which

This statement ignores the claims, where the word "stretched" does not appear; seizes upon one out of

can 'only vibrate mechanically in the manner of a diaphragm'. Surely this cannot encompass a microphone 'mounted upon unstressed foam rubber', or a microphone' • • • suspended by the foam rubber • • • without any stress upon the mounting member other than the slight weight of the microphone itself." (p. 6)

six different meanings for the word "stretched", and *assumes* that "stretched" in the *specification* means "stretched taut." It overlooks and ignores the alternative meanings of "extended" or "spread" which *do* fit with the patent disclosure.

Thus, the New Century Dictionary (Appleton-Century-Crofts, Inc., 1948) gives the following definition:

" 'Stretch' . . . To draw out or extend (one's self, the body, limbs, wings, etc.) to the full length or extent; lay full length, as in a prostrate position (as, to stretch one's self on the bed for a nap; ... *extend, spread,* or place so as to reach from one point or place to another (as, to stretch a rope across a road; to stretch a curtain over an opening); *also,* to draw tight or taut (as, to stretch the strings of a violin or the membrane forming a drumhead)." (Emphasis supplied).

Judge Schnackenberg's statement, ignores the fact that the whole idea was a lack of stress or tension in the microphone mounting (Finding 33 R. p. 563) and thus distorts and perverts the word "stretched" to defeat the object of the inventor.

Cubert did not emphasize a "stretched" support. *That word appears no where in the four claims involved in this suit*, and only twice in the specification. (Cubert Patent, Column 2, lines 11 and 55). In the latter of these instances it is expressed as part of the phrase "stretched flat," clearly indicating extension rather than stress.

Judge Schnackenberg's misconstruction of "stretched" ignores uncontradicted evidence that the silk sheet embodiment of the invention was extended without tension. Thus, witness Drumm when asked if there was any stress on the silk, testified: "No, there are no stresses, other than merely the stress of the microphone casing itself. There are no stresses" (R 138). There is no contradiction of this testimony anywhere, and the district court's finding must stand. (Finding 33, R. 563)

Moreover, the interference proceeding, in which the Cubert application was the winner, conclusively demonstrated that the silk sheet was not stressed; in the interference the Cubert patent prevailed over *unstressed* rubber mountings because they were, *like the silk sheet, unstressed.* (Finding 18 R. 561).

In this statement and other statements in Judge Schnackenberg's decision the opinion emphasizes Cubert's alleged use of a "diaphragm." Each emphasis also distorts and misconstrues the record. The language by Cubert thus referred to is found in the record (pp. 468, 469) as follows:

"The point is that applicant's silk or other cloth does not *transmit* molecular or other vibrations. It can *only* vibrate *mechanically* in the manner of a diaphragm. That is what gives the microphone freedom of motion within the outside casing." (Emphasis added). Cubert did not, as the Court's opinion implies, state the use of a diaphragm to be essential. He was distinguishing molecular vibration, as transmitted by *mounting-elements* under tension, from mere mechanical vibration, that is, a vibration resulting from energy directly applied to the microphone, rather than molecularly conducted through its mounting; and used visual *mechanical* movement of a *diaphragm* to emphasize the absence of vibration *conducted* from the casing.

6. In *Noble Co.* v. *C. S. Johnson Company,* 241 F. Ed. 469 (CA 7, 1957) and again in its recent decision, *The University of Illinois Foundation* v. *Block Drug Co.,* Appeal # 11,605, decided January 16, 1957; 112 USPQ 204, rendered by the Court of Appeals of the Seventh Circuit Court since its decision in this cause, that Court reasserted certain rules of law governing its review of findings of fact in proceedings brought to enforce patents which rules it abandoned and disregarded in its decision in this cause. In Appeal # 11,605, that Court held that the issues of infringement and equivalence are issues of fact, and followed this Court's construction of Rule 52(a) of the Federal Rules of Civil Procedure, as set forth in *Graver Tank and Manufacturing Company, Inc., et al.* v. *Linde Air Products,* supra, p. 3. Movants herein respectfully ask that they have equality before the law and that those rules of law be applied in their case.

Respectfully submitted,

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